/138 cont./

177 Since contact with the Whites was established, wars have
721 apparently declined considerably, but even today they exact a decidedly heavy toll.

22 The Auin is at the lowest stage of human development; he is exclusively a collector and hunter.

This way of life is dictated to him by the nature of his en-
133 vironment. This part of the Kalahari, where the watering places
137 are sometimes 100 kilometers apart and very limited in number,
182 does not permit livestock raising, especially also since the tschama [sometimes spelled tsama, a kind of melon] enjoyed by the cattle is comparatively rare.

In the Auin region the plain dominates the landscape.
133 Primary rocks rise up here and there only along the river banks. So-called dunes give the landscape a gently hilly character, especially in the vicinity of the rivers (dry river beds which carry
137 water only after violent rains). The ground cover alternates between grass, shrub, and tree steppe and dense undergrowth. The
132 amount of precipitation is very small; the lack of sufficient statistical data makes it impossible to give a more precise estimate.

B. Dwellings and Furnishings

342 The typical form of the dwelling is the windscreen, in other words, the most primitive form of human habitation, which scarcely deserves the designation "hut." Its construction is completed in a few minutes. A few twigs are stuck loosely into the ground at the thicker end in a semicircle and propped against each other at the branching end. I have never seen the supports firmly fastened to one another, although I have examined several hundred huts. Grass is thrown on the framework, and the construction is finished. During the dry season the structures are usually built even more hastily and sometimes consist merely of a few bundles of grass that have been thrown loosely between the twigs of a living bush. The entire structure is often scarcely a meter high and has no roof. It is thus a genuine windscreen, intended to protect its inhabitants from drafts while they are lying down.

If the settlement remains at a particular place for only a few days, the people content themselves with the shadow of some

[7 cont.]

222 825 The honey badger, !uisa (N. !ous), which leads to the bees, is followed ever so eagerly.

224 The common wild pig (gariba), the kudu (daub), the gemsbok χ'uaba (N. /gaib), and all the small antelopes are hunted. Pits are no longer known, although they used to dig them in former times.

If they decide to go hunting, sexual intercourse must be [834] avoided the night before. In the evening the hunters go into the forest and spend the night there. Before dawn they rise and pray:

[534] Pu, pu, Eró, /nari dsu /ari mate — God, tomorrow early we receive.

When a piece of game has been killed, one of the hunters cuts a piece of flesh from the animal's body and hands it to the leader of the hunt. This meat is called am-shái-khe. A fire is made, and this piece is placed on it. When it is roasted, the leader cuts off a piece and shouts:

[539] Ero, Ero, Ero, ha gore, ha gore — Erob, Erob, Erob, eat, eat
i Khe Khandi ô — With us flesh.

After a pause:

ha lĕ a lĕ ha góre o Khandi ô — Come! Come! Let us eat flesh.

Now the roasted flesh is consumed. Nothing is thrown away or left behind for Erob.

Then the game is cut up, and everyone goes home with his portion.

136 Snakes are not rare, although they are by no means as common as in the stony regions of the southwest.

The boa constrictor eats human beings; if it catches a Bushman, it starts to consume him at the legs!

● 132 821 731 In spite of the timber forest, the danger of drought is great. Erob sends rain. When there is a drought, the Bushmen dance and pray:

[539] Ero, Ero, Ero, /ga !goro — Erob, Erob, Erob, we are dying of thirst
/ga-wi -ma ta re — Water give us.

177 776 782 [8] It is very interesting to observe how in these certainly very ancient hunting and rain prayers the former old heathen gods' names Huwe and χ'amab were replaced by the Christian "Ellob."

I asked the people whether they knew any other prayers and received the following answer: "We know very well that

6:Marshall E-5 (1950-1955) 1957 FX10 Bushmen FX10
Kung

N/OW

LORNA MARSHALL

821 ***N/ow***[1] **is a belief concerning rain and cold which is held by the /Kung Bushmen in the region around Nyae Nyae in South West Africa.**

132 **About ten inches of rain falls in an average year in this part of the Kalahari Desert and sinks into the deep sands. There is no run-off in streams and there are few water**
137 **holes. The rain is sufficient to support a covering vegetation of grass, shrubs, and scrubby trees. The vegetation includes numerous edible roots, tubers, leaves, fruits, and nuts, for which the Afrikaans language provides the convenient word *veldkos*.**
105 **The /Kung, the only inhabitants of the interior of this particular region, are**
821 **nomadic hunters and gatherers. If the rains are poor and the veldkos dry and sparse, the people suffer. Rain, they say, is life-giving; sun is death-giving.**

132 **Summer is the season of the ' big rains ' in the western Kalahari. ' Little rains '—a few scant showers—may fall in September, October, and November. The ' big rains ' begin in late December or January and continue into March. The summer storms are awesome. Every day the winds drive monstrous clouds around the sky, which domes a horizon as flat as the sea. They breed the storms. Lightning streaks from them. Thunder roars and rumbles. The earth sucks in their deluges, hissing.**

821 **The /Kung say that thin clouds which give no rain are male. They call them *//ow*.[2] The big rain clouds are female. White ones they call *//ga kwe disi*—*//ga* means cloud or rain, *disi* means females.[3] The enormous grey clouds with rain pouring from them the /Kung call */kwesi* (zebras), because they are so fleet and, though a person may think he is far from the rain, it comes swiftly and is on him. We have seen Bushmen, caught without shelter in the storms, shivering so that their teeth chattered, saying they could perish in such rain.**

532 **Rain itself is male and female, */ga /go* and */ga di*. The men one day drew in the sand the spoor of male and female rain. Male rain spoor was made with all five fingers held stiffly and plunged deeply into the sand, to make big holes. Male rain breaks the trees and beats down the fruits, the men told us. It is (like) a fight, and may kill a person. Thunder and lightning accompany it, and sometimes hail. Female rain has tiny drops and does not spoil anything; it beautifies the trees and the grass and makes the veldkos grow. Its spoor was made by smoothing out a place in the sand and cover-**
532 **ing it closely with tiny dots. Gao said a person (anyone) may speak to the rain, saying, ' You are doing very well ', or, ' Fall silently. Don't make such a noise. Don't be**

[1] We wish to thank both Dr. Mary Douglas and Professor I. Schapera for reading the manuscript about *n/ow* and for making several helpful suggestions.

194 [2] The /Kung language has four clicks: / is the symbol for the dental click, ≠ for the alveolar, / for the alveolar palatal, and // for the lateral.

[3] We did not know how to translate *kwe*, which occurs very often. It seemed sometimes to be a sort of article and we did not work on it especially. We regret not having done so because Miss Bleek, in her *Bushman Dictionary* (American Oriental Society, New Haven, Connecticut, 1956), records in the Auen or //K"au-//en language, which she says is very like the /Kung and which she places south of the /Kung, the phrase */ga -k"wisi*, meaning rain's hair or cloud. In /Kung */ga* and *//ga* both mean rain. We now wonder if *kwe* should be *kwi* and if it means hair in the phrase *//ga kwe disi*.

6:Marshall E-5 (1950-1955) 1957 FX10 Bushmen FX10
Kung

dangerous.' When they do they use the word *n/oi*. It is a word for gentle rain, and also a respect word. They use it for male rain when they are afraid of it and avoid its real name, */ga /go*.

The rains of the western Kalahari are local, falling from clouds which the winds herd. They may fill one pan and miss another. Laurence Marshall spent one whole night, tentless, in a drenching downpour, to find in the morning that a mile away no rain had fallen. But by and large the rains are sufficient in quantity and well enough dispersed to fill most of the water-holes, pans, and hollow trees, and to revive the growing things, so that the autumn months, which follow the rains, are good—the best of the year. Then the /Kung may travel anywhere within their territories to hunt and gather the fresh veldkos. The rains are life-giving.

Winter is the season of dryness. It is also the season of burning sun in the cloudless sky by day and freezing cold when the sun sets. Bitter winds catch up the sparks of the fires at night and whirl them in blazing streaks into the darkness. If water is left in an open bowl, it may be ice in the morning. By mid-winter, July, there has been no rain for three or four months. The pans and small water-holes are dry. Though there are still foods to be gathered, like the mangetti nuts in the northern forest, there is no water on the route, nor in the white sand dunes where the mangettis grow, and the people cannot carry enough in their ostrich-egg shells to go to the mangettis and return. In 7,500 square miles of the interior of the region around Nyae Nyae, there are only five water-holes which do not dry up in the winter and spring. The /Kung bands must gather around whatever permanent water-hole they belong to and restrict their hunting and gathering trips to conform one way or another to the problem of water. This region, incidentally, does not abound in tsama melons and, though there are succulent so-called ' water ' roots to be found, they seem not to be sufficient to support whole bands for long. The Nyae Nyae bands, it appears, cannot, or at least do not, base themselves for long periods away from their water-holes.

The spring months which follow the dry months of winter are the dangerous months. The sun is scorching. Fruits and leaves shrivel; the edible roots, stirred by the few tantalizing drops of the little rains, or just because it is spring, give up their juices to the first new shoots and are dry and bitter to eat. The people longingly await the rains, saying it is the sun which dries the water-holes and the plant foods. The /Kung of this region use one word for both sun and dryness, */kam*, and say the sun is death-giving.

In their beliefs about *n/ow*,[1] which they think influences the weather, as this paper will describe, they make an antithesis between rain and cold. This seems paradoxical when one experiences the devastating heat of the sun in September, October, and November, but the resolution of the paradox may lie in the fact that the hardships of the dry seasons begin with the rainless winter months and their bitterly cold nights, so that sun, dryness, cold and want become a complex which is in antithesis to rain and plenty. *N/ow* is called ' bad ' if it brings cold, ' good ' if it brings rain.

Mrs. Hoernlé[2] records a Hottentot belief called */nau*. The word appears to be

[1] We spell the /Kung word *n/ow* in this way because it rhymes with ' how '. We wish to distinguish it from another /Kung word, */naw*, which it closely resembles, but which has a slightly shorter, more closed sound. */Nau* means ' old man ', according to Miss Bleek's *Bushman Dictionary*. We heard it used as a term of respect in addressing old men.

[2] Hoernlé, Agnes W., ' Certain Rites of Transition and the Conception of */nau* among the Hottentots ', *Harvard African Studies*, ii (1918), pp. 75–77.

6: Marshall E-5 (1950-1955) 1957 FX10 Bushmen FX10
Kung

A party of /Kung men had gone hunting towards the west. John, our son, was with them. In the afternoon there appeared in the western sky three little white clouds, like three powder-puffs in a neat row. They were the first clouds to be seen since the big rains had ended in March. We ran to each other, pointing them out. People felt happy. In the evening, when the hunters returned, ≠Toma came at once to me, before he put down his bow and quiver, and said that I could see for myself what it meant to ≠*gani* an animal. John had ≠*gani*(ed) the wildebeest he shot, and the clouds had appeared immediately above them. ≠Toma said this was what he had been trying all along to explain to me.

If a hunter knows with certainty that he has ≠*gani*(ed) or ǁ*ghui*(ed) an animal, as it was known when John killed the wildebeest that he had ≠*gani*(ed) it, he may take the horns and the scalp and forehead bone and hang them in a tree, remembering where they are and whether they had been ≠*gani*(ed) or ǁ*ghui*(ed). If need should arise he could get the horns which were appropriate to the need and burn them in a specially made fire away from the cooking-fires. He would take a piece of the burning horn and point it to the sky saying '*goichi goichi goichi n!ow qui*'. This we were told is 'speaking *n!ow*'. The interpreters did not know and could not find out by questioning people what the words mean. We wonder if they are an archaic spell. The horns must be entirely consumed by the fire.

In *Bushman Folklore*[1] there is a reference to the burning of horns in a very interesting myth about the Rain Bull, related to Dr. Bleek in 1878 by a Bushman from Strontbergen (30° S., 22° E.) whose dialect included the fifth click of the southern group, as the Katkop dialect does. In this myth a young woman cleverly saves herself from being carried away on the back of the Rain Bull to the water-pit where she would have been turned into a frog, and all of her people also would have become frogs. At the end of the myth the informant who related it said, 'The old women who had been out seeking food were those who came to burn horns, while they desired that the smell of the horns should go up, so that the Rain should not be angry with them.'

A hunter has another way of controlling the weather. To bring rain he would cut the throat of an animal he had reason to believe he habitually ≠*gani*(ed), or to stop rain, one he habitually ≠*ghui*(ed). The blood, which is ordinarily saved and eaten, would be allowed to flow on to the ground. A giraffe is the best animal for blood-letting. The forms and colours of the clouds are like giraffes, the /Kung remarked. We asked if human beings cut themselves and used their blood to start or stop rain as they do their urine or hair. The /Kung said, No, they did not. That would be unnecessarily painful.

As far as we know the /Kung did not attempt to control the weather by these means while we were with them, as they did not resort to burning urine or hair of persons. Perhaps this was because the weather took its normal, expected, seasonal course. Furthermore, we did not experience its most severe extremes for very long periods, and found it on the whole quite bearable. Or perhaps the concept of controlling weather by means of burning urine, hair or horns or letting blood, exists more in lore than in active practice. Or perhaps the long unchanging months do not stimulate the idea of actively attempting to control weather and the people content themselves with explaining rather than controlling. They appeared in many instances to have the

[1] Bleek and Lloyd, op. cit., pp. 193 ff.

7:Story N-5 (1955) 1958 FX10 Bushmen FX10

INTRODUCTION.

Early in 1955 the Chief of the Union Government Division of Botany received a request through the British Museum for a botanist to accompany the Harvard-Smithsonian-Peabody expedition, which in the winter of that year was to make a study of the Bushmen of the Bechuanaland Protectorate and South West Africa. The duties of the botanist would be to investigate and report upon the plants used by the Bushmen in obtaining food and drink, and this task was assigned to me in my capacity as one of the Botanical Survey Officers of the Division of Botany. 121

I joined the expedition on 10th June at Molepolole, after it had been some weeks in the field, and we thereafter travelled along the route shown on the map, reaching Windhoek on 2nd September. 122

There were two main areas of study, one in the country south of Ghanzi and the other north of Ghanzi. The southern area, part of the Kalahari Desert, was remarkably uniform in every way. The surface was deep loose sand, gently undulating and with occasional shallow depressions of firm dark soil known as pans, which collect a little water after rain. We did not see a hill after leaving Molepolole until the Ghanzi area was reached, nor a stone, except for shelves of limestone in some of the pans. There was no permanent water in the 300 miles between Kudumalapshwe and the Ghanzi farms, but Khungwane waterhole and Khomodimo Pan had not yet dried up. Khungwane held one or two thousand gallons and Khomodimo contained a pond about thirty yards across and a foot or so deep. It provided a home, rather unexpectedly, for a coot (*Fulica cristata*) and a water-scorpion (one of the *Nepidae*). There are no records of the central Kalahari rainfall, but it would be between 18·5 and 19·6 inches, which are the mean annual figures for Ghanzi and Molepolole respectively. In spite of this low rainfall, and although we were there in the dry season, we found that the sand a few inches below the surface and down to at least three feet was damp enough to retain its form when squeezed in the hand. One specimen of a species of Breviceps was found in the sand, a small burrowing frog which does not swim or jump and which passes through its tadpole stage in a mass of frothy material which surrounds the eggs. The commonest animals were the rodents whose burrows and tracks were in thousands along our route. The game included gemsbok, springbok, hartebees, eland, blue wildebees, giraffe and smaller antelopes and hares. Of the carnivora, lions, leopards, wild dogs, jackals and hyaenas were present. Ostriches and bustards were seen and occasional small birds of various species, but birds were on the whole poorly represented. The vegetation was mainly grassland, usually about four feet tall and mixed with many shrubs a little taller. Trees were seldom absent for more than a few miles at a stretch, and were scattered to form a parkland or in belts thick enough to hamper the progress of our lorries through them. 133 [134] [312] [136] [132] 136 137X

The northern area was much more varied, with the undulations sometimes forming distinct rises and dales. Hills, however, were still absent, although there were occasional outcrops of limestone and other rock. The soils were for the most part fairly firm, but sandy nevertheless, and damp below the surface. From time to time we crossed zones of purer loose sand, slightly raised above the surrounding country and known as dunes. A number of permanent waterholes, groups of large pans and a rainfall estimated to be about 20 inches a year (Department of Transport 1953) made this area better watered than the Kalahari, and better wooded. 133 [134] [132] 137X

As the spellings of the Bushman names on my herbarium specimens are from field notes, they are often different from the spellings given in this paper, which was done after I had had the opportunity of consulting the authors I have mentioned. It will be noticed that many of the plants do not have the full set of Bushman names. The main reason is that we were not in contact with the Eastern !khû speakers until we had passed Ghanzi, and lost contact successively with the |gikwe, ||ganakwe and !h3: speakers as the expedition drew to a close. Other reasons are that my field notes were sometimes inadequate, that I forgot to ask, and that some plants appeared restricted to certain areas and were not known to all the groups of Bushmen.

As the expedition was during the winter when most of the plants were in poor condition, very little photography was done in the field. Most of the photographs are from plants which were sent back to Pretoria and cultivated there, or from plants which grow naturally in the Transvaal. In this paper the plants and photographs are arranged according to de Dalla Torre and Harms (1900-1907). Specimen numbers are in brackets.

There is little doubt that the plants discussed here represent only a fraction of those used, for we covered a very small part of the area over which the Bushmen range, and this when probably most of the annuals were dead, when some foods were out of season and when the above ground parts of many bulbous and tuberous plants had withered and disappeared so that the plants themselves could not be found.

Because of poor yield, poor quality, difficulty in harvesting or lack of flavour, not many of the Bushman food plants would be worth cultivating in their present form for the use of civilised people, but they offer a large field to the plant breeder. The most promising have been noted accordingly in the text.

There were few bones around the Bushman encampments, but this does not necessarily mean that there is a scarcity of meat in their diet, for the bones might have been removed by porcupines (Alexander, 1956; Dart, 1957) or eaten by hyaenas. A more reliable indication was the scantiness of the Bushmen's skin coverings. There are sharp frosts in the Kalahari and sometimes bitter winds, and one may argue that the Bushmen would provide themselves with sufficient skins if they had a regular supply of meat, although admittedly they eat skins after charring them on the coals and pounding them in a mortar. Vegetable refuse from former meals and fresh vegetable food, however, were found at all the Bushman encampments, and additional gatherings were the permanent chore of the women and children and of the men to a lesser degree. The insanitary condition of the surroundings also provided unmistakable evidence that the bulk of their food was of vegetable origin.

Their knowledge of field botany was astonishingly good. It has to be, otherwise they would have no chance of survival in their arid country. Fragments of stem, dead leaves, and other small clues of this nature, after being unerringly identified, were all the Bushmen needed to find many of the storage organs they were seeking. Differences which escaped me would enable them to distinguish between edible and harmful plants, and they had a thorough knowledge of the areas and habitats in which their food plants grew. They must have an influence on the distribution of plants,

372 *hei-doros*: The new *!ou-/ais* now serves to supply the other members of the group. At times it may happen that all the members of the community may not be living in the *//gãus* 361 (camp), but in some outside werft. This is usually the case [132 only in times of drought when the game have moved far afield 622 and great difficulty is being experienced in obtaining veldkos. 372 Further, people driven out by another group and seeking protection are sometimes allowed to live some distance away from the *//gãus*. Such communities are not allowed to make their own fire or to obtain it from any other source, but the *!ou-/ais* of the *gei-khoib* in whose territory they are living. 372 Persistent ill-health among the members of the community 622 or difficulty in obtaining veldkos or want of luck in the chase [751 may cause the *gei-khoib*, either of his own accord or after 777 consultation with his people, to proclaim that it is necessary to make a new fire. In such an event all fires, including the *!ou-/ais* are extinguished by being covered over with ashes. The *gei-khoib* at the same time notifies all outside camps of his decision and the latter likewise extinguish their fires. He then kindles a new *!ou-/ais* in front of his hut with the hei-doros and applies *//norab* and *dabas* in the manner described above. The new fire is not made on the same spot as the old fire, but a few feet away from the place on which it had been. 184 The custom of kindling and maintaining a perpetual fire is 372 met with among all the organised primitive groups. Want of space and time does not permit, however, of a detailed account being given of the superstitions which have gathered about this custom among the various tribes.

Family Life

593 Each family within the group occupies its own hut. Children sleep with their parents until they are strong enough to go about by themselves, when the boys join the others under the tree and the girls take up residence in the hut for unmarried girls.

512 The women rise early, light the fire and prepare the food for the morning meal which usually consists of veldkos. After having eaten, the men go out visiting or hunting or engage in some other occupation such as preparing skins, weapons, etc. The women accompany each other in search of veldkos and go out soon after the men have left. When food is obtainable at no great distance they are usually back in camp towards midday. When they have to go far they may not reach home until late in the afternoon. Wood is collected on their way back. Immediately after their return they proceed to prepare food, the younger married women and young girls in the meantime fetching water. The food is ready by the time the men arrive in the evening and the latter are able to partake of it without delay.

462 There is a sharp division of labour between the men and women of the group. The former do the hunting and snaring of game, prepare the weapons, skins for clothing, snares, fire-

9: Thomas T-5 (1951-1955)1959
FX10 Bushmen FX10

CHAPTER ONE

The Desert

THERE is a vast sweep of dry bush desert lying in South-West Africa and western Bechuanaland, bordered in the north by Lake Ngami and the Okovango River, in the south by the Orange River, and in the west by the Damera Hills. It is the Kalahari Desert, part of a great inland table of southern Africa that slopes west toward the sea, all low sand dunes and great plains, flat, dry, and rolling one upon the other for thousands of miles, a hostile country of thirst and heat and thorns where the grass is harsh and often barbed and the stones hide scorpions. 131 133 137

From March to December, in the long drought of the year, the sun bakes the desert to powdery dry leaves and dust. There are no surface waters at all, no clouds for coolness, no tall trees for shade, but only low bushes and grass tufts; and among the grass tufts grow brown thistles, briers, the dry stalks of spiny weeds, all tangled into knots during the rains, now dry, tumbled, and dead. 132 137

The Kalahari would be very barren, very devoid of landmarks, if it were not for the baobab trees, and even these grow far from each other, some areas having none. But where there 137

9: Thomas T-5 (1951-1955)1959
FX10 Bushmen FX10

137 is one it is the biggest thing in all the landscape, dominating all the veld, more impressive than any mountain. It can be as much as two hundred feet high and thirty feet in diameter. It has great, thick branches that sprout haphazardly from the sides of the trunk and reach like stretching arms into the sky. The bark is thin and smooth and rather pink, and sags in folds toward the base of the tree like the skin on an elephant's leg, which is why a baobab is sometimes called an elephant tree. Its trunk is soft and pulpy, like a carrot instead of wooden, and if you lean against it you find that it is warm from the sun and you expect to hear a great heart beating inside. In the spring, encouraged by moisture, these giants put out huge white flowers resembling gardenias, white as moons and fragrant, that face down toward the earth; during the
262 summer they bear alum-like dry fruits, shaped like pears, which can be eaten. In the Kalahari there is no need of hills. The great baobabs standing in the plains, the wind, and the seasons are enough.

132 Usually in the hot months only small winds blow, leaving a whisper of dry leaves and a ripple of grass as though a snake has gone by, but occasionally there is a windy day when all the low trees of the veld are in motion, swinging and dipping, and the grass blows forward and back. When there is no wind, heat accumulates in the air and rises in thick, shuddering waves that distort everything you see, the temperature rises to 120° Fahrenheit and more, and the air feels heavy, pressing against you, hard to breathe.

June and July are the months of winter. Then water left standing freezes at night, and with the first light of morning all the trees and grass leaves are brittle with frost. The days warm slowly to perhaps 80° at noon, but by night when the sun sets yellow and far, far away over the flat veld the cold creeps back, freezing the moisture from the dark air so that

9: Thomas T-5 (1951-1955)1959
FX10 Bushmen FX10

the black sky blazes with stars. In winter the icy wind, pouring steadily across the continent from the Antarctic, blows all night long.

There are only three months of rain in the whole year, and these begin in December, ending the hottest season when the air is as tight and dry as a drum skin. Under the rain—which is sometimes torrential, drenching the earth, making rivers down the sides of trees, sometimes an easy land rain that blows into the long grass like a mist—the heat and drought melt away and the grass turns green at the roots. Soon the trees flower, and in the low places the dry dust becomes sucking mud. Towering clouds, miles away, widen the horizon, and all the bushes which stretch in an unchanging expanse over dune after dune now blossom and bear white or red or violet flowers. But the season is short, and the plants bud, flower, and fruit very quickly; in March the drought creeps in, just as the veld fruits ripen and scatter their seeds.

When the rains stop, the open water is the first to dry, making slippery mud and then caked white earth. By June only little soaks of waterholes remain, hidden deep in the earth, covered with long grass. These, which are miles apart, dry up by August, and then travel in the veld is nearly impossible. Because of this, large areas of the Kalahari remain unexplored.

We have crossed this desert three times, my family and I, on three expeditions, which usually numbered between ten and fourteen people and included my father, my mother, my brother, and myself, as well as several other Europeans who were linguists, zoologists, botanists, or archaeologists, sent by universities of the Union of South Africa, England, or the United States, as well as four or five Bantu men—several interpreters, a cook, and a mechanic—who were the staff. We usually traveled in four big trucks and a jeep, and had to carry

9: Thomas T-5 (1951-1955)1959
FX10 Bushmen FX10
GiKwe

609 Gai on the hood to point the way. From his higher position he noticed the long horns of a gemsbok in the grass and he signaled for the jeep to stop. Then he, John, and Theunis, taking a rifle, slipped out of the jeep and ran off after it, bent over and crouched so low that only their backs showed, as the backs of animals would, gliding above the grass. The gemsbok saw them and ran away toward a patch of heavy bush in the plain, the great V of horns a crown over its head. The men ran after, standing now, and in an hour they came back to where Ukwane and I were waiting, lying on our stomachs under the jeep to be in shade, saying that they had killed it. We drove to the spot where the gemsbok, a female, lay and brought her with us, a present to offer the other Bushmen.

361 We drove for several hours and at last we came to a wide plain, grown over heavily with small trees of slender trunks, with a few short branches sprouting leaves, like fence posts. Gai directed us to one of the smaller trees in the center of the [237 276] plain and told us to stop. He climbed down and looked around over the veld, then bent and picked up a small pipe, a piece of the leg bone of an antelope. He asked us for a match, lit his pipe, and smoked it.

At last we noticed on the other side of the tree two shallow depressions scooped in the sand and lined with grass, like [58] the shallow, scooped nests of shore birds on a beach—the homes of the families, where the people could lie curled up ● [132] just below the surface of the plain to let the cold night wind which blows across the veld pass over them.

Other than the depressions, except for a small pile of brown, twisted bean shells, no sign would show that people lived there. Later we saw another scooped pit and a stick thrust upright in the ground beside it, right at our feet, which [423] was Gai's place; the stick was to mark the spot, although Gai

9: Thomas T-5 (1951-1955)1959
FX10 Bushmen FX10
GiKwe

flames for a moment like a flame itself, then slipping down behind the fire, made the rising smoke a great, soft, purple cloud. As the sky darkened, the flames around us seemed brighter and more yellow, and farther away we saw a thousand smaller fires burning, each in a tuft of grass or in a tree. 731

After we had eaten we sat watching our burning wall move away from us, listening to the cries of birds, day birds chased from their branches by the fire, night birds flying through the smoke to catch insects that were trying to escape. All the air stank with an oily odor given off by the burning trees—not at all the pleasant smell of burning wood, but a deathly odor, the smell of a forest being destroyed.

When we lay down in our blankets to sleep we found that even the ground was warm, and as soot and ashes drifted over us we lay awake and listened. Once during the night we heard something large run past us. A little later, farther away, we heard the sharp roar of a lion who must have tried to cross a patch of burned ground and had singed his soft paws. We heard his slow footsteps as he tested the earth carefully, then a grunt as he was scorched again. It made him cross, for he walked in a huge half-circle around us with a growl running steadily in his throat. I had thought that the Bushmen were asleep, but they had also heard him and they laughed. Now and then, during the night, the burned trees crashed around us, and as our fiery wall moved slowly away, the rising smoke was gray in its yellow light, the stars were all obscured. [152 522]

Before dawn in the morning the crescent of the new moon rose, the tiniest sliver in the chilly air, followed by the salmon band of light, redder than usual because of the smoke. The wind must have blown a good deal of the fire back on itself because much of it was out, leaving a cloud of smoke hanging 132

9: Thomas T-5 (1951-1955)1959
FX10 Bushmen FX10
GiKwe

above the earth in a layer. We were crouching at a fire we had built, warming our hands against the cold, when the sun came up. We heard birds singing in the fresh air as if nothing had happened, then the sound of faint pounding far away, a mortar being struck with a pestle. Soon we heard a second mortar join the first as another woman began breakfast for her family, and we knew that two women meant perhaps six people, therefore a band.

Gai stood up and stretched his legs, then took a tiny coal from our fire between his thumb and finger and dropped it into his pipe, inhaling deeply and holding the smoke in his lungs while he handed the pipe to Witabe, who also puffed and returned the pipe, when at last Gai exhaled, spat, and scooped the pipe through the sand, extinguishing the fire and saving the rest of the tobacco. He stuck the pipe in his belt, flung his great kaross over his chest to warm his belly, and strode off in the direction of the sound, the ragged edges of his great cape swinging at his ankles as his strong feet carried him away. He walked under a burned log that had partly fallen and was braced up by another tree, and as he did the white ashes blew from it and the light of dawn shone through the ash like light through a flurry of snow.

Later in the day, when we had eaten cornmeal for breakfast, while we waited for Gai to come back, we went down to the flats below our hilltop to inspect the damage of the fire. The land below our camp was in utter desolation, startling and ruined, a desert of ash. We found only the orange sand and black ashes still in the shape of the grass blades that made them, black ashes below burned bushes still in the shape of the leaves that made them, and, on the ground, flat, perfect skeletons of vines, just in the shape of the vines that made them but black, in powder, disintegrating into dust when the wind touched them. All around us lay the smolder-

9: Thomas T-5 (1951-1955)1959
FX10 Bushmen FX10
GiKwe

123 wind and held the sun-warmed air inside itself like an oven. The three young Bushman boys found this out quickly, and early in the morning when the sun came up they would crouch outside, shivering and naked, and whisper "Nisabe, Nisabe" until I opened the door to let them in. The four of us filled the tent entirely, but when I would leave for breakfast they would stay behind, looking in my mirror and leafing through my notes. I gave them crayons and paper and asked them to draw, but they wrote instead, wiggly little lines that looked for all the world like handwriting, complete with dotted *i*'s. Once, when I looked in to see if they had drawn anything, they showed me a page of my notes which had a smudge and a tiny rip in one corner. They had not torn it, for they were more careful and precise than cats—in fact, I had done it myself—but they were upset over the destruction of property, and when I told them it was nothing important, perfectly all right, they were not pleased. I seemed to them lavish and wanton; I should have repaired it or at least shown that I was sad.

132 512 One morning in early July they came to my tent before sunrise and I woke up when I heard their teeth chattering. Before I had the door completely open they had all popped in, and when I went outside, wearing a sweater, a coat, and mittens, I found that it was surely the coldest day of the year. A strong south wind was blowing, straight from the Antarctic, scattering our fire, whose smoke and heat blew down the wind, and even standing in the smoke we could not get warm. In our pails the water was frozen into solid ice, and we saw our breath in clouds around our heads.

We went to the werf through grass white with frost to see how the Bushmen were faring and found them all awake, crouched over the coals of their little fires. Tsetchwe and Gai sat side by side, Gai all wrapped in his big kaross which cov-

9: Thomas T-5 (1951-1955)1959
FX10 Bushmen FX10
GiKwe

ered him entirely so that only his head and toes were showing, Tsetchwe in her small, ragged kaross which covered only her back, leaving her legs, belly, and shoulders bare. Near them sat Ukwane and Kutera, bundled up together in Ukwane's tattered kaross in front of a handful of embers on a small pile of white ash, Kutera having been too tired to gather much firewood the night before. Dasina sat by herself at another very small fire with the baby, stark naked, standing on her lap. He alone did not seem to mind the cold, for he smiled at us cheerfully when we came by. The others hardly looked up.

They had burned all their firewood the night before, and now it was too cold to go for more, or even to go for food, so they sat cold, hungry, thirsty, and even tired, since they had been too cold to sleep during the night. They were waiting, as they had waited all night, with infinite patience, infinite endurance, for noonday, when the sun would give a little warmth; but the sky was overcast, and even at noon the sun would still be far away.

Twikwe stood up to poke her fire and the Antarctic wind howled along the ground, blowing her little kaross back from her shoulders and leaving her naked except for her apron whipping around her legs, and her string of beads. The icy wind made the branches over her head rattle, made her breath blow back like smoke and her eyes stream with tears. She sat down again, downwind from the fire, wiped her eyes, and, wrapping her lanky arms around her legs, put her head on her knees and waited. It was six o'clock in the morning; they had six hours to go.

A little later I crossed the flat pan of Ai a ha'o to look for firewood in the plains on the opposite side. When I got there I saw a hawk in a tree, a hawk with a fine red beak and handsome gray feathers. He had gnarled, stalky legs and he

9: Thomas T-5 (1951-1955)1959
FX10 Bushmen FX10
GiKwe

CHAPTER SIX

Veld Food

132 271 137 With the warm air came a series of long, fat clouds sailing from the north like slow dirigibles, some of them showering down a few drops of rain. We were amazed to see rain in winter, the dry season, something we had not seen before, and we asked Ukwane about it. He said that it was not unusual for rain to come in the wintertime but very hard on the people of the desert, as it fools the wild vegetables from which the Bushmen get their water.

There are many kinds of wild roots which can be eaten in winter, and each is marked among the grass blades by an almost invisible dry thread of a vine. The roots are swollen with liquid by which the plants preserve their life during the drought. When the plants feel the onset of spring, warm air and raindrops, the dry vines suck moisture out of the watery roots, turn green, and put out tiny leaves, and in this way, if the false spring lasts, the roots are soon sucked dry entirely. Bushmen cannot get enough water from eating the vines and leaves. The plants do not bear fruit until summer; the spring-season vegetables, such as little onions, pods like pea pods,

9: Thomas T-5 (1951-1955)1959
FX10 Bushmen FX10
Gikwe

and leafy green vegetables that taste like rhubarb, have not grown in yet; and so the Bushmen must go thirsty. People have died of thirst in these false seasons.

Gathering veld food is the work of the Bushman women, and I used to go with them quite often on their trips. We sometimes stayed in the veld all day eating roots instead of drinking water. One day my brother came along to film the gathering of veld food, and as we were getting ready to leave, Gai also joined us. It is customary for Bushmen never to let a group of their women go anywhere with a Bantu or a European man unless a Bushman man goes with them to protect them. Gai sauntered along behind us in his role of guardian, quite unhampered, as he had nothing with him but his loincloth. Dasina, Twikwe, and Tsetchwe walked in front, each with a digging-stick thrust in her belt like an enormous knife, each wearing a heavy cape, and Tsetchwe carrying her baby, who rode, carefree and swinging his feet, on her shoulder. John and I walked in the middle of the procession, and at the end came the three young boys, who did not stay in single file but ran all over the veld, ran circles around us, and shouted to each other happily.

We walked across the pan of Ai a ha'o through the fine, soft grass, which left tiny, barbed seeds sticking to our legs. We walked through the brush on the opposite side and then over a wide plain, where we saw a herd of wildebeest. No one was armed, and when the wildebeest saw us, put down their heads, and ran, we could only watch helplessly as all that meat galloped away.

We walked until we came to a patch of tsama melons, perhaps twenty of them lying together, shiny, smooth, and green in the grass. The vine that once had nourished them had dried away and already some of the melons were turning yellow, overripe, ready to open and release their seeds.

9: Thomas T-5 (1951-1955)1959
FX10 Bushmen FX10
Gikwe

dome of its own pink light, and in front of this minute sunset we saw whirlwinds crossing. Later, when the darkness came, we even saw a ring around the moon with red at its outer rim, and on the following day it did rain, something that happens only rarely in the month of July. [133]

9: Thomas T-5 (1951-1955)1959
FX10 Bushmen FX10
Kung

said to be ant lions which at night rise from the bottoms of their little traps of sand.

Since we had lived a year in Nyae Nyae we knew the round of the seasons, which Kung Bushmen say are six in number. We came there in July, in winter and the start of the drought, the coldest season. August was bitterly cold and also dry, but in September the air began to get warmer and heralded the next season, called "little winds before the rain," a season of whirlwinds, drought, and clouds of dust. In October, suddenly and presenting a startling sight, a thorn tree near our camp turned quite green and the heat began to be intense. This was the start of the springtime, the dryest, hottest time of all the year and a time of starvation, for the water in the waterholes gets very low until only a little remains on the bottoms and the wild roots push sap into their vines so that the vines turn green and sprout but the roots themselves are shriveled. This was the worst season of the year for the people. Before this, during the winter, the large extended band that we had gone to visit was separated into little family groups that were scattered through the veld, living at little waterholes that did not keep their water all year long. During the dry season the water in these waterholes vanished, causing the small family bands to gather at the last sure waterhole of the area, a waterhole called Gautscha, which was beside a huge flat pan called Gautscha Pan.

There was one rather large band that always lived at Gautscha and numbered some forty people, who divided themselves into sometimes three, sometimes four family groups. They thought themselves lucky to live there, for Gautscha was considered to be a sort of paradise, where the waterhole was cool and deep, and (it was said) game gathered at all times to lick the salt, for Gautscha was a salt pan. It was the salt that made Gautscha most desirable, because salt is

9: Thomas T-5 (1951-1955)1959
FX10 Bushmen FX10
Kung

the old man with a funeral, and they had had to abandon his sister's body as it was.

The headman lifted the old man from the ground and we saw that he had not been weeping but had only been lying inert and helpless, powerless now to keep himself erect. On our truck he lay just where we put him, motionless, prone, all the way back. We passed the grove where his sister lay, a grove of high white trees with red beans on their branches, and the old man did not turn his head to look.

After that, the situation for the people who remained at Gautscha got better because the summer came. Great cloud-banks like mountains formed at the horizon, dispersed themselves in brown haze, and formed again, getting larger day by day. Some of the bands who had left Gautscha began to return and once again the countryside was populous, the air filled with the murmur of voices and the smell of smoke from the many fires. Some of the men went hunting and shot a giraffe, so there was lots of meat for a while.

One day some of us went to a place called Kubi Pan to see a cheetah that was supposed to live there, but instead we saw a flock of guinea fowl walking along in single file as people do, raising a cloud of dust. Two of them began to fight because it was their mating season. When we got to Kubi it was evening and the clouds on the horizon were very thick, and just when the sun set into them the full moon rose on the other side, causing a balance of the two great bodies over the earth.

It seemed to be an auspicious night. On the way home we felt something electric in the air and when we got to Gautscha the moon had risen high and pale in the clouds and we found that the Bushmen were dancing the rain dance. Everyone was there, the women all singing and the men wheeling

9: Thomas T-5 (1951-1955)1959
FX10 Bu men FX10
Kung

789 in a circle around the dance fire, the clouds of dust rising un-
535 der their feet making them look like specters in the eerie light between the fire and the moon. The dance was very powerful. The men wheeled faster, the singing mounted in pitch. A medicine man coming from a far werf and singing as he came sprang among the dancers like a leopard, soft-footed and fine, and as he looked around him for a moment before beginning to dance, the moon behind his head filled a white ostrich feather in his hair with light. He smiled to himself, then, dancing suddenly, led the other dancers in a serpentine track through the circle of women, over the fire, and out the other side. The wind blew hard along the ground, and the smoke and fire streamed into the veld. The singing was very hard, very fast, and as the dancers swung around the circle dancing harder and faster, it suddenly began to rain.

It was like a miracle. It was the first rain of the year. First, there were just a few drops, but soon it was raining steadily in gusts behind the wind, causing the dancers to relax a little but to continue their dancing without paying attention to the fact that they were drenched. A bolt of lightning illuminated the veld for miles around with a blue-green light not of this world, showing all the trees and bushes stark and rain-lashed in the grass, then a blast of thunder as the light went out which struck us deaf as the lightning had struck us blind. For a moment it was black and still except for the lashing rain, and in the silence we heard a lion roaring far out in the veld, answered by another lion which was a little nearer, and then a peal of thunder shook them silent, drowning even their great voices.

132 The people had not danced to bring the rain; they had
[789] known that rain was coming and had danced to use its strong medicine. It rained all night, the rain so drenching and torrential that it put out the dance fire and drove the dancers

9: Thomas T-5 (1951-1955)1959
FX10 Bushmen FX10
Kung

into their scherms, and in the morning there was a lake of shining water on the pan and lilies growing everywhere, where only their dry leaves had been before.

After that the rain came often. Some weeks it rained a little every day, some weeks the rain became torrential and flattened the Bushmen's grass scherms, but it made the veld rich and green, with flowers everywhere and all kinds of fruit, which grew on trees and stalks and bushes. The pan became the home of shore birds, marabou storks and flamingos. Leopards and lions drank there, game antelope waded through it, leaving deep tracks in the mud, and the Bushman children sometimes danced in the shallows, their feet making flashing, rhythmic splashes, or bathed themselves until their skins were shining gold.

One night I went to the werf with a lantern and suddenly found myself beset by insects flying all around me, attracted by the light. It was the mating flight of white ants, which had come out of the ground in great numbers and now filled the air. The Bushman men were away on a hunting trip, unfortunately, but the women came to the light as quickly as the ants and began at once to catch them and stuff them into their mouths, saying "*gurico gum*" as they did so, *gurico* being the name of the ants and *gum* the word used for candy, for sweet gum that oozes from the trees, and for sweet caterpillars. Much faster than the women could eat, more and more ants came flying in a swarm as thick as a blizzard and already the ground was white with wings, for the ants, throwing themselves to the earth, would drop their wings instantly and begin to mate with each other in twos, in threes, even forming in great circles that turned as the ants ran scurrying to keep their positions, each one mounted with its forefeet on the back of the ant before it, pushed on by the ant behind. Sometimes an ant would fail to shed its wings and, finding

9: Thomas T-5 (1951-1955)1959
FX10 Bushmen FX10
Kung

that the great trains dragging hampered its mating, would twist and thrash and struggle, squeezing the wings between its thorax and abdomen, which did break off the wings but left the stubs. More and more ants were flying to the light and their circles were growing bigger and bigger until we couldn't move without stepping on them, but the women, getting more excited and moving very quickly, as if responding to the pace and the excitement of the ants, scooped them up and ate them as fast as they landed, spitting out the silver wings as one would spit out chaff. Over our heads a few night birds and many bats were flying, catching and eating the ants before they reached the ground, and around our feet huge pink hunting-spiders rushed in and out of the swarm, dragging the ants from their acts of copulation and carrying them away to eat them in the dark.

Before long the flight had ended. Only a few late-coming ants bumped against the light, the night birds and bats were gone, and the spiders had run away. Nothing was left but the white wings like petals all over the ground and the wings that were caught in people's throats or stuck to their faces. The women, quite composed now, brushed themselves off, and one of them sang a song:

Gurico gum, ah
Ah, ah.

I noticed that each woman had managed to save a little bag or vegetable husk full of ants for her husband. These they put away.

That was in the late spring, a fertile season full of promise, and when it was over the best season of the year began, called the Veld Food Season, which starts some time in March. The big rains have ended, the air is warm but not hot, the veld is filled with water, game, fruit, roots, and

9: Thomas T-5 (1951-1955)1959
FX10 Bushmen FX10
Kung

Those were two willful girls, too beautiful, too proud, too much admired, but the young boys couldn't do enough for them. It was one of their admirers who cleared the grass for the werf that the cousin's parents were building, and though the two girls teased and ridiculed the boy all the while, snickering contemptuously at him from behind their swinging beads, he worked on happily until not a blade of grass remained. 882 572 857

But Beautiful Ungka and her cousin were not as sophisticated as they thought they were, really, for when they would hear the music of the melon game they would abandon their poise and decorum to run for the sound, arms waving, ornaments and clothing streaming out behind, and when they found the game they had been hearing they would jump into the middle of it and play with abandon, singing loudly and dancing fast for fun. Also, Beautiful Ungka could spit through her teeth like a man. She could draw back her head and spit ten feet and she did this often, smiling scornfully, an astonishing accomplishment for such a handsome girl. Her cousin used to try it too; she could spit a little way but not nearly as far as Beautiful Ungka. 883 526

After all, they were only sixteen. There is a Bushman mood song with these words: 533 539

I am tired and old and without people,
I wish I could marry a young girl.

There were so many great fires around Nama that the sky was dark with their smoke, and when the sun rose in the morning, one day shortly after we had got there, we could not even see it until it was far above the horizon and then it appeared red and enormous, murky. In the west two new fires had sprung up, perhaps lit by Bushmen to show where they were 132 ●

9: Thomas T-5 (1951-1955)1959
FX10 Bushmen FX10
Kung

or perhaps kindled by the wind from old embers, and their new smoke rose white against the sulphurous sky. The dawn was warm, the north wind blew and, though the smoke it carried stung our eyes, it carried too the sound of insect voices and frog voices from the pan. These songs and cries of creatures made the air seem alive, the veld large, quite different from the deathly quiet dawns of frost.

We were getting ready to look for Short Kwi and his people, and that morning we packed a truck. Everyone felt apprehensive, and at Toma's werf Gao Feet, a medicine man, was throwing oracle discs to see what would happen. He crouched in front of his kaross, which he had spread to throw the discs on, and beside him sat Toma and several other men, their lips pressed against their hands, absorbed, watching. We watched over his shoulder; at a distance, for oracle discs are men's business, the women were standing up to see.

Gao Feet had five discs made of antelope hide, which he would shake in his hands and then drop upon the kaross. When they fell in certain positions, they would tell him certain things. Before he would throw them, though, he would assign identity to them; if he was wondering where people were he would call them men and women, or name them after people he wanted to see, and if he was trying to predict the outcome of a hunt he would call them kudu or gemsbok or wildebeest, male and female, then would see in which direction game could be found, and how far away. Sometimes, too, he would call one disc a hyena and then, if this disc fell upon the disc that was the wounded antelope, he would know that hunting that day would be useless; the hunters would never find their prey.

Sometimes he threw them with a particular question in mind and sometimes, as this morning, he named them and then threw them just to see what would turn up. Perhaps he

9: Thomas T-5 (1951-1955)1959
FX10 Bushmen FX10
Kung

the bottom too, "with his head driven down between his shoulders," said Toma laconically, hunching his own neck to show how it was.

A third man whom Toma did not name climbed for honey in the Gura baobab, a tree somewhat north of Gautscha Pan, and he also fell; but, happily, he survived his experience. His sister and her husband were below him, watching, and when they saw him fall they held out their arms to catch him. He fell through their arms, of course, but his fall was broken and though he was unconscious for a long time he finally did recover.

The moral of these stories, Toma said, was to show that young people should listen to older people and not act rashly. I believe that he thought I was going to try to climb the Gautscha baobab (which I had already done, though only to the lowest branch, fifteen feet from the ground), for he went on to say: "When Bushmen tell young people not to climb baobab trees they should listen. It is seldom that a person lives who falls from a baobab tree, they are so high. Even those good climbers I told you about, they all fell." I assured him that I did not even want to climb it and he said: "Good. When we who are experienced get the honey you can watch from below. Then you can see just as well."

The Gautscha baobab was somewhat east of the pan, and we could see it rising from the plain when we were almost a mile away from it. It loomed up at the horizon, towering, its mass of upper branches hazy because we were so far. As we moved toward it, it seemed to move away from us like a distant mountain, but gradually, after a long time, it began slowly to get larger, looming higher, its top branches reaching up to the sky, where the clouds of spring were already forming as the desert got ready for the rains, three months away.

137 Africa, these valleys once flowed—draining water from the high edges into the Basin. Now the sand has wandered into these valleys also.

132 There are four seasons in the Kalahari, two are brief. Winter begins in May and lasts through September. It is a healthful season. Of the foods available to gatherers in winter, roots are the most abundant. The earth is dry: the days are warm and clear, but cold in the shade; the nights are chill. Temperatures sink to 20° F. and below when the night wind turns, blowing from the antarctic south. On some hazeless nights, when the empty air seems insufficient protection from the cold of space, the morning ground will be wet with heavy dew. However, the smoke from a thousand African veld fires often thickens the skies of noon, reddens the setting sun and keeps the nights warmer and the earth dry.

At the end of September, clouds be-

[342]

FOR RAINY SEASON, the open-fronted grass shelters are more substantial.

[p. 8]

11:Marshall E-5 (1950-1955) 1958
FX10 Bushmen FX10
Kung

132 gin to tower in the afternoons. They wear over the desert from the east and are usually gone by morning. But should they encounter the right conditions, the local rains that fall from these clouds—the "little rains"—bring the spring of the year. This is the sudden season of thunderstorms. The storms are like gods walking in the desert, each attending to a narrow path with violence and rain. In the quiet, after their passing, many plants bloom—small flowers and edible greens.

[136] SPRING is also the season of heat. Myriads of flies, the year's crop, now hatch. The heat increases toward

132 summer and, although clouds continue to form early in the afternoon, often no rain falls. November and December pass in heat and privation for the people. Temperatures rise above 100° F. not long after the brief dawn, as the sun mounts, close and huge, bringing the heat of day. Many of the blooms of the "little rains" wither in November, as do many young greens. The roots have sent their substance into vines; now the loose skins of the roots lie collapsed around inedible fiber. Spring means blooming of plants, but spring is ardent and quickly over: many of the desert's flowers have only a few days in which to flourish.

[P. 14]

132 LATE in December or early in January the rains of summer—the "big rains"—begin. This is the season of water. Water collects in the hollows of the land; it seeps into the pans, changing them into shallow lakes; it melts the baked clay in the *omuramba* bottoms, and turns the Kalahari green.

132 This is the season when two nuts, the *tsi* and the *mangetti*—the most im-
262 portant and abundant of the wild desert foods—begin to mature. By
137 March, the *mangetti* forests sound with the falling nuts. Beside the summer storms—when water piles up uselessly on the reverberating earth—days on end are cloudy and, sometimes, a fine mist falls over parts of the northern Kalahari through the day and into the night. Now, the people eat many fruits. In the deeps of green thickets, ponderous flowers droop on slender
[164] vines. Spring and summer, the times of bounty, are also the seasons of disease.

132 By the end of April, the afternoon skies begin to clear, the air dries, the wind seeks. It is autumn. In April, the *tsi* nuts ripen and the pods split, turning out their brown wealth. The many desert roots cease their activity and become firm and full, safe in

132 themselves for the winter and in a state most suitable for food. The desert pales. Day and night, water evaporates from the pans; first becoming a film, then less than a film, with only the damp clay glistening. One noon, the clay begins to wrinkle in the sun. By June, the earth is dry: the land is fast and quietly held by winter.

132 731 Such would be a perfect round of seasons. In the periods of drought that have come every few years in the recent past, however, there have been no such perfect seasons and all living things have, of necessity, fastened tenaciously to the drying earth and held on. Even in normal years, the weather is unbalanced: large areas of the Kalahari may be flooded, while others receive a sprinkling of rain in what amounts to drought conditions. In this land, and through these seasons, the !Kung nation lives.

[131] 174 THE AREA in which the !Kung now live is called *Nyae Nyae*. How long they have lived there is not

15: Marshall E-5 (1951-1961) 1965
FX10 Bushmen FX10
!Kung

guages, some now virtually extinct, were characterized by a fifth click made with the lips, called the kiss click (⊙). In addition to clicks, the Bushman languages have tones: high, middle, low, rising, and falling. Oswin Köhler has given special attention to tone as well as to other features in his study of Bushman languages, especially Barakwenga (Köhler 1962).

Each of the large divisions of the Bushman languages—the northern, central, and southern divisions (see Bleek 1956)—differs markedly from the others. Within each group are several languages, sometimes resembling each other enough to be considered merely dialects of the same language, but more often differing so widely as to be distinct, mutually quite unintelligible languages. The !Kung described in this chapter (Köhler's and Westphal's !Xũ) belong to the northern group.

HABITAT • The Kalahari Desert, some 1200 miles long, with a mean high altitude of about 3000 feet, forms part of the great plateau of southern Africa. It is a basin in form, covered with wind-blown sands, sometimes red, sometimes white, to a depth of 300 to 400 feet. The underlying rock crops out rarely in ridges and a few low hills.

Stamp (1953:78) classifies the Kalahari as a semidesert. Its conditions are not the most extreme. Our expeditions recorded daytime air temperatures in the shade up to 115° F. and sand temperatures in the sun up to 140° F. In winter the temperature at night falls below freezing but for most of the year the nights are temperate. Although they seem acclimated to the heat, the Bushmen appear to find the colder temperatures very uncomfortable and shiver violently if they are away from their fires when the cold south winds blow.[8]

The rainfall, which comes in summer thunderstorms—6 to 10 inches, increasing in the better-watered parts toward the north, according to Wellington (1955:61)—though slight, is sufficient to sustain a varied drought-resistant vegetation, and the country is covered with grass, brush, and scant small trees. In the northern and northwestern parts, the trees are more numerous and taller and include shivi groves and nut-bearing mangetti—important sources of food to the Bushmen. And in all the areas of the desert that Bushmen inhabit are found edible plants, in scant, far-apart patches perhaps, but existing. The vegetation, furthermore, provides material for fires, shelter, weapons, implements, tanning, poison for arrows, and juices (for example tsama melons, on which these people can live when there is no water). In short, this desert provides the things that make life possible; otherwise the Bushmen would be dead or somewhere else.

The desert is a forceful shaper of the outlines of Bushman culture, and both the possibilities it permits and the limitations it imposes have been meaningfully summarized by Robert Story in a personal communication:

16: Lee E-5 (1963-1965) 1966 FX10 Bushmen FX10

TABLE 1

Periods of Research, Camps and Seasons of the Kalahari Bushman Study

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131
• 132

Period	Location	Season
1963		
August	on survey, northern Kalahari	winter, cool dry
October-December	Dobe	end of hot dry, small rains, main rains
1964		
January-February	Tsodilo	main rains
late February-end April	Dobe	end rains, onset of winter dry
early May	Tsodilo	onset of winter dry
mid June	on survey, southern Kalahari	winter cold dry
late June-early September	Dobe area	winter cold dry
September	Kuli-Ghanzi	spring hot dry
late October-December	Dobe area	end of hot dry, small rains
1965		
early January	Dobe-Maun	small rains

136
278 arrows: Diamphidia nigro-ornata and Polycada flexuosa. These are described in Chapter VI.

Climate

132
[133] The Kalahari Desert has a mean elevation of 3,000 feet above sea level and lies within the summer rainfall area of Southern Africa. These factors contribute to a climatic regime that is characterized by hot summers with a three to four month rainy season, and by moderate to cool winters without rainfall.

132
805 Five seasons may be distinguished in the Dobe area. Most Bushmen recognize five (although some divide the year into eight or more seasons) and their scheme will be followed here.

Seasons

1. !huma (spring rains) -- The Bushman year begins in October or November with the onset of the first rains. These consist of light convectional thundershowers that often fall on one area and miss other areas entirely. The first rains have the effect of triggering growth and reproduction in the flora and fauna and may overnight transform the landscape from a parched and dry state to one of lush greenery.

2. bara (main summer rains) -- These rains fall from December to March and coincide with the season of plentiful food. There is a wide variation from year to year in the

132
805 dates of onset and termination of the main rains. For instance, in 1963-64, the major rains were concentrated in an eight-day period in late November and early December and were very light during the next three months. In the following rainy season, 1964-65, the major rains came later. They were only just beginning when we left the study area in [137] January, 1965. During the period of the main rains, the [312] major summer foods (fruits, berries, melons) make their [262] appearance, and there is standing water in the molapos far from the permanent wells.

3. ǂobe (autumn) -- The autumn season is brief. In [312] 1964, it fell in April after the rains had ceased. The weather remains warm and the high evaporation rates rapidly dry out the pools of summer water.

4. !qum (winter) -- This cold dry season extends from May through August. It is heralded by a sharp drop in nightly temperatures and during 1964 the Dobe area experienced six weeks of freezing or near-freezing nights in June and July. The days are clear and, by tropical standards, cool, often characterized by strong dessicating winds from the south and west with gusts estimated at up to 40 knots. [312] Water is available only at the permanent wells and plant foods [262] become increasingly scarce as the season progresses.

5. !qa (early spring) -- This season begins in late

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805
[312]
[262]

August with a rapid increase in daily temperatures and ends in October or November with the onset of the first rains. It is a hot dry period during which water and food supply reach their annual low levels. However, the increasing day-length appears to prepare the flora and fauna for the season of reproduction which is triggered by the first rains.

Rainfall

Until 1961 there was no weather station in the central !Kung interior. In that year a rain gauge and other recording instruments were established at Tsumkhwe, South West Africa, a government station 35 miles west of Dobe. The data from this station are not available to the author. The only other sources of rainfall data are the author's fifteen-month series of measurements made at Dobe (1963-64) and the long-term records from stations on the periphery of the Kalahari. The peripheral stations and their rainfall are listed below:

South West Africa

Epukiro - (200 miles southwest of Dobe) - 13.2 inches per annum.

Grootfontein - (200 miles west of Dobe and 1,000 feet higher in elevation) - 17.3 inches per annum.

Bechuanaland Protectorate

Ghanzi - (175 miles south of Dobe) - 18.5 inches per annum.

16: Lee E-5 (1963-1965) 1966 FX10 Bushmen FX10
!Kung

• 132 Maun - (175 miles east of Dobe) - 18.6 inches per annum.

The rainfall recorded at Dobe for 1964 was only 6.9 inches. This is a much lower figure than that from any of the peripheral stations but it is within the range of annual rainfall estimated by the Marshalls. During their several expeditions to the central interior from 1951-59, they estimated that the annual rainfall varied between 6 and 10 inches (L. Marshall, 1965).

The period 1963-65 was one of severe drought in Bechuanaland. There were many instances of crop failures and drying up of waterholes throughout the Protectorate. Although it is not possible to judge accurately without comparative data for other years, it is probable that the Dobe area !Kung Bushmen experienced an unusually difficult subsistence situation during the period of the author's resi-
[262] dence. Because the Bushmen subsist on hardy wild foods which are drought-resistant, they did not suffer the hardships experienced by their Bantu neighbors whose crops failed three years in succession. However, it is possible that the Bushmen had to work harder, walk farther and dig deeper in 1963-64, than they would have had the rainfall been more abundant. This possibility should be kept in mind when evaluating their annual subsistence cycle (Chapter VIII).

The monthly record of rainfall at Dobe is shown in Figure 2, p. 94.

16: Lee E-5 (1963-1965) 1966 FX10 Bushmen FX10
!Kung

• 132

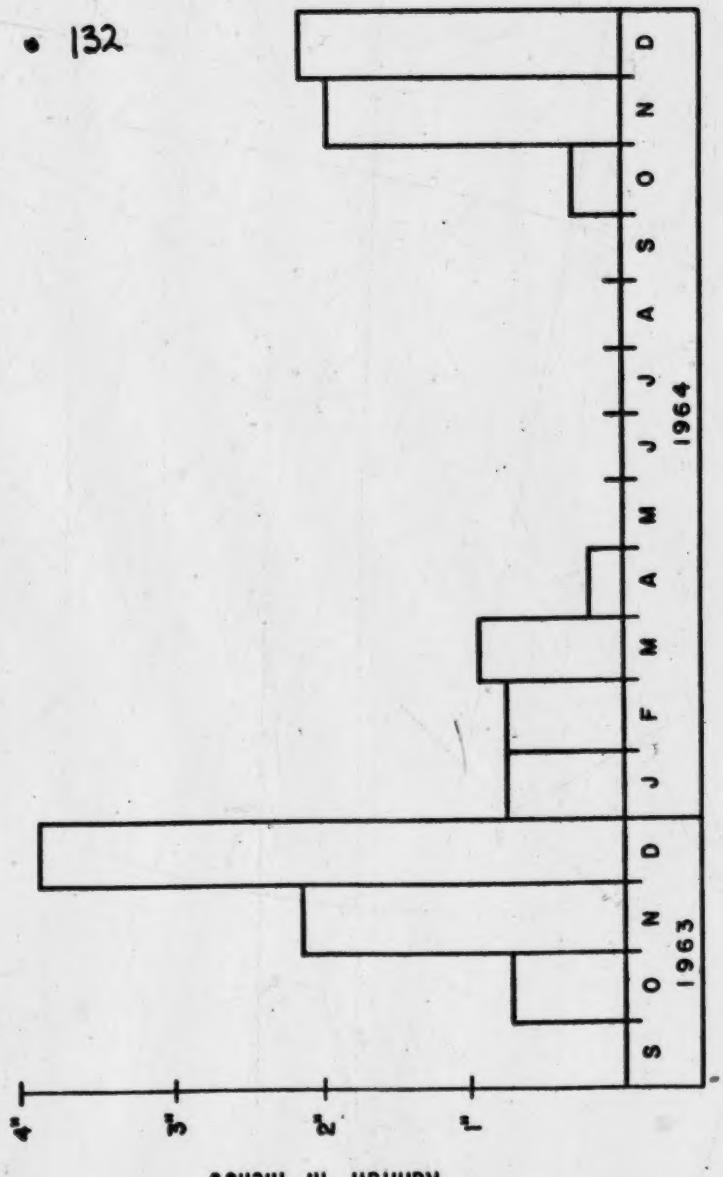

FIGURE 2. Rainfall at Dobe Bechuanaland, September 1963 through December 1964

Temperature

• 132 The records of daily temperatures maintained by the author are incomplete. The temperature data for six repre-

[126] sentative months are shown in Table 4. Using a standard Minimum-Maximum dry-bulb thermometer, the author recorded the lowest and highest temperatures in each twenty-four hour period. Column 1 of the table shows the average of all the daily minima recorded in each month and column 2, the average of all the daily maxima. Columns 3 and 4 show, respectively, the lowest and highest single recordings in each month. Column 5 shows the average diurnal range from low to high in each month. This figure was calculated by subtracting the mean low from the mean high for each month and it is rounded out to the nearest degree.

The critical temperature datum in terms of subsistence ecology is the daily maximum because this is an indicator of the heat conditions under which the people must hunt and gather. Walking in the sun on a day when the shade temperature is over 100°F imposes a much greater burden on the individual's fluid metabolism than does walking in the sun when the shade temperature is under 80°F. Consequently, a Bushman's daily water requirements are much greater in summer than in winter. The water/subsistence problem is considered in detail in Chapter VIII.

• 132

TABLE 4

MONTHLY RECORDS OF TEMPERATURE AT DOBE

BECHUANALAND 1963-64 (In Degrees Fahrenheit)

	mean low	mean high	record low	record high	average diurnal range
Spring					
October 1963	60.1	99.0	49	108	39
November 1963	62.9	96.3	61	102	33
Summer					
February 1964	66.8	100.0	63	105	32
Autumn					
April 1964	59.0	93.9	46	100	35
Winter*					
June 1964	30.4	78.4	26	84	48
July 1964	34.8	76.8	25	85	42

*includes six weeks of freezing or near-freezing nights.

Day Length

132 [131] The Dobe area is situated at 20° south latitude and there is an annual variation in day length at this latitude of slightly less than two hours. In mid-winter (June-July) the sun rose about 7:00 a.m. and set at 6:00 p.m. In mid-summer the sun rose about 6:00 a.m. and set at 7:00 p.m. This seasonal variation plus a corresponding variation in temperature had a noticeable effect on the activity patterns of the Bushmen. During the winter they arose late and stayed around their camp fires until mid-morning. They concentrated their subsistence activities in the warmer middle hours of the day (10:00 a.m.-5:00 p.m.). On the other hand, during the hot summer days they adopted a "crepuscular" activity pattern. They arose at 6:00 a.m. and worked until 10:00 a.m. Whenever possible they spent the hottest mid-day hours resting in the shade. There was a second period of activity during the cooler hours of the evening (5:00-7:30 p.m.).

[404] When long hikes were undertaken the Bushmen had no alternative but to travel during the hottest hours of the day. Even during the hot dry season (September-October) they were never observed to hunt or travel at night.

361
824 of summer foods such as the berries of Grewia spp. and melons of the Citrullus vines, and a selection of winter foods such as roots of the genera Vigna and Coccinia, and edible gums from the genera Acacia, Terminalia, and Burkea.

361
824 No two territories have the same constellation of plant foods and no single territory provides the complete inventory of 85 species of plant foods. The Bushmen are well aware of the variations in plant resources between the several territories and there is general agreement on the "strong" and "weak" points of each territory. For instance, !ubi is famous for its Baobab fruits (Adansonia digitata), a food which most other territories lack. /ai/ai is known for the abundance of its wild orange trees (Strychnos spp.) but is considered "weak" in vegetable ivory palms (Hyphaene ventricosa) which are rare south of the Aha Hills. Dobe, on the other hand, is said to be "strong" in vegetable ivory palms and "weak" in the wild orange trees. Bate is famous for its groves of trees bearing the morula nut (Sclerocarya caffra) but is "weak" in trees bearing the mongongo nut
• [192] (Ricinodendron rautanenii). Furthermore, local variations in seasonal rainfall may produce an abundance of food in one territory and leave another territory with a food scarcity.

361
433 The important point is that every territory has enough food to sustain at least some of its members throughout the

312 221 The availability of water can be regarded as the most important determinant of Bushman subsistence activities. A season by season account of these activities will serve to illustrate how subsistence strategies take maximum advantage of water sources. The annual subsistence cycle is described under six headings:

1. First rains
2. Main rains
3. Autumn
4. Early winter
5. Late winter
6. Spring

1. <u>First rains</u>

The onset of the first rains finds the Bushmen clustered [361] [574] around their permanent waterholes. It is this time of year that camp membership is most stable because all areas are short of food and there are fewer incentives for visiting [132] other camps. Also the weather is hot with mean daily maxima of 100°F and walking is uncomfortable.

312 221 824 Food, in the vicinity of permanent water, is in short supply. Fruits, berries, melons and leafy greens, which appear only during the main rains, are nowhere available. The mongongo nuts are still abundant but are found only at distances of ten or more miles from the permanent waterholes. The diet

312 at the waterholes consists primarily of roots and bulbs of the
221 genera: Eulophia, Vigna, Walleria, and Coccinia, and the edible
824 sap of Acacia spp. and Terminalia sericea. It is this time of year that the heart of the dwarf vegetable ivory palm is eaten, [164] (Hyphaene). Those who eat its fibrous pulp experience stomach cramps and diarrhea, but, as the Bushmen say, it make one's "mouth work" and gives one a sensation of a full stomach.

221 Hunting is arduous business in the heat and men who go out in
224 the early morning find it necessary to spend the mid-day hours resting in the shade. The principal animal killed is the springhare.

• 132 The first rains are convectional thundershowers. Their distribution is spotty. A storm may briefly inundate one area and miss entirely another area only a mile away.

312 The Bushmen observe the storm clouds travelling across
222 the horizon and try to judge where the showers have drenched
[821] the ground. They then set out in family groups in the direction of the rains. If they find that water has collected in the hollows of mongongo trees, they will stay in the nut groves for several days and eat nuts until the water is exhausted. They then fill their karosses with nuts and return to the permanent water. If, on reaching the nut groves, they find that no water has collected they will be forced to fill their karosses with nuts and return to camp the same day. In certain areas

312
222 where the water bearing root Fockea monroi is available the Bushmen may extend their stay in the nutting groves by eating the juicy pulp of this root. If they are fortunate, this water source may tide them over to the next shower, part of which will accumulate in the hollows of trees.

13 The first rainfall, however brief, appears to have the general effect of triggering reproduction in animals, and initiating the growth phase in plants. Among the first of the summer foods to appear are the leafy greens Dipcadi glaucum and Talinum crispatulatum.

• 132 There is no well-defined boundary between the first rains of October and the main rains. J. Marshall mentions that during his periods of field work a gap occurred between the first and the main rains. In 1963 and 1964, however, the showers gradually increased in intensity and frequency from [433] October through December. The date of onset and the intensity of rainfall varies greatly from year to year and a delay of even a few weeks in the onset of rain can cause considerable hardship amongst the Bushmen. Furthermore, an initial rain followed by weeks of dry weather is a mixed blessing, for it brings the plants prematurely into leaf and they become scorched and damaged by the subsequent sunshine.

In 1963, the first rain fell on 8 October. In 1964, it did not fall until the 11 November and one noticed that the

132
433 physical condition of the Bushmen was visibly poorer in November 1964 by comparison with November 1963.

2. Main rains

132 The Bushmen say that a series of intense downpours
361 (measuring 2-3 inches) heralds the beginning of the main
[821] rains and ushers in their season of abundance. Such a fall occurred in 1963 at the end of November. The immediate effect of these downpours is to produce standing water in the small molapos that lie in the interstices of the dunes. When these seasonal waters become established, virtually the entire Bushman population moves out to live at them. Thus from December through March the permanent waterholes are largely deserted.

312 With the coming of the main rains, the summer foods
433 begin to ripen. These foods appear around the summer water
222 sources and they appear also around the permanent waterholes. It is significant, that, although foods become available at the permanent waterholes, the Bushmen tend to avoid these foods. They prefer to eat the foods that are around the summer waters. This illustrates one way that the Bushmen take maximum advantage of the more distant foods. They defer exploitation of the foods around the permanent waterhole until the winter when the alternative water sources have dried out.

222
312 because it entailed two consecutive days of hardhiking on
482
484 short water rations. The object of such a trip was to get to the nuts and back again as quickly as possible, before the physiological deficit of water was allowed to reduce efficiency.

221 The general object of the winter nutting trips was to
222 remain at the nut forests just long enough to eat a really
262 substantial quantity of nuts (about 400 nuts per adult). This marathon meal starts the moment that the Bushmen arrive at the nut camps and continues throughout their stay. It is interrupted for short periods when the Bushmen go out to col-
[539] lect nuts in the vicinity of their temporary camp. There is a Bushman saying that aptly applies to this situation: "It is better to carry food home in your stomach than on your back."

[224] Hunting rarely occurs at these overnight camps. The efforts of men and women alike are directed to eating as many nuts as possible in a short time.

[312] The most important variation in the late winter and spring subsistence tactics centers on the use of Fockea monroi as a source of water. This will be discussed below.

• 132 6. Early Spring

August is the last month of winter. The last of the freezing nights occurs at the first of the month and these are followed by warmer nights in the 40's and 50's and daily

132 highs in the 90's. The warmer weather heralds the onset of
312 spring which is the most difficult season of the year. Most
137 of the waterholes have no mongongo nuts within a ten mile
222 radius. The alternative foods, roots and bulbs, are being collected daily by some of the people, while others are making the long overnight journeys to the nut forests.

221 Since territories vary in the abundance of early spring
574 foods there was a noticeable tendency for families to visit
628 other camps. For instance in September, Bate still had a good supply of Sclerocarya caffra, nuts; and several families from Dobe, Mahopa, and !angwa converged upon Bate to eat these nuts. Similarly !ubi had a supply of Baobab fruits (Adansonia digititata) and other families made extended visits to relatives there. The maintenance of close ties between camps made possible a more equitable distribution of food-stuffs, so that, if there was scarcity at one camp, and food at another, the members of the first camp would not go hungry. This is one of the highly adaptive features of the fluidity of !Kung group structure.

[563] Some families fall back on the Herero villages at this
[431] time of year to beg for milk. This occurs especially among those people who have a sister or cousin married to a Bantu man. Both the Bushman and Herero codes of good manners demand that visiting in-laws be fed (L. Marshall 1961).

222
484 location closer to the nuts. By 7:00 a.m. this camp had been
312 deserted. The women and their children had gone to collect
[462] nuts and the men had set out to find Fockea roots and to hunt
[224] along the way. The men carried no water with them on the hunt. The author accompanied the men.

We walked south for several miles looking for fresh animal tracks and for patches of Fockea plants. We passed through two molapos where the Fockea plants were likely to exist, but to our disappointment we found none. It was 10:00 a.m. before we dug out the first Fockea of the day.
[132] By this time the morning coolness had disappeared and we had to walk and dig in the sun with shade temperatures about
312 100°F. The first Fockea worth digging were found 4-1/2 miles
824 south of our camp at !wi/wama. The roots were the size of a football and weighed about three pounds.

The flesh of Fockea is white and juicy with a spongy granular texture. The juice is milky in color and slightly astringent so that it smarts when accidentally rubbed into small cuts on the hands. There are two methods of extracting the moisture from the root. First, one cuts open the root with a knife and chops off chunks of the flesh inside. This may be eaten directly like watermelon. The disadvantage of this method is that one must swallow about three pounds of roughage in order to extract one pint of moisture; in other

484 until 8:00 p.m. Before making camp we ate wild oranges along
123 the way (Strychnos a inosa) but these did not contain much
312 moisture. We camped at a point halfway between !wi/wama and Dobe and there shared out the last of the family's drinking water, which amounted to one quart for four adults and three children, that is c. 4-1/2 oz. for each of us.

484 November 8 - The camp awoke at 4:50 a.m. By 5:20 we had
123 packed and were under way, arriving home without incident at 7:30 a.m.

484 November 8-16 - This ended the author's participation in
312 the Fockea trip. Six members of the original group remained
361 at !wi/wama eating nuts and drinking the juice of Fockea. On the eleventh of November there was a heavy fall of rain at !wi/wama which created a temporary pool of water near their camp. This enabled them to extend their stay beyond the original plan of five days.

484 The same week that the rain fell, the pregnant woman of
361 the camp gave birth to a baby boy. The group remained at the
844 nut camp until the mother was strong enough to walk. Then they broke camp and returned to Dobe on November 16. Both mother and child appeared to be in fine condition.

• 132 The rain of November 11 was the first substantial fall
221 of the 1964-65 rainy season and initiated the subsistence activities associated with the late spring (see above). Thus

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221 this account of the seasonal round has come full circle to the starting point.

312
433 In summary, there are, in effect, only three basic sets of subsistence conditions for the Bushmen:

1. Water everywhere - Food everywhere
2. Water limited - Food abundant
3. Water limited - Food scarce.

221
312
433 When the first set of conditions prevail during the rains of November through March, Bushman life is sweet. The camps
[628]
[674] can live near the most concentrated food sources within their territory, or share in the food supply of neighboring camps,
[602] or easily undertake the long trips to visit relatives at distant waterholes.

When the second set of conditions prevail, from April through July, freedom of movement is more restricted but food is still abundant enough to make life comfortable.

When the third set of conditions prevail, from August through October, the Bushmen must resort to increasingly arduous tactics in order to maintain a good diet, or, alternatively they must content themselves with foods of less desirability in terms of abundance, ease of collecting and nutritive value.

It is during the three lean months of the year that the Bushmen life approaches the precarious conditions that have

2: Schapera E-4, 5 (no date) 1930
FX13 Hottentot FX13
Bushmen FX18

H B 133 miles, without peninsulas of any size or any large islands off its coasts.[1] By far the greater part has an elevation of over 3,000 feet above the sea, while the area below 1,500 feet is merely a narrow fringe round the coast. Most of the interior consists of a high plateau region, rising gradually around its borders and passing by degrees into an encircling belt of much diversified country. The escarpment which bounds it on the south-east, south, and west is constituted by the Drakensberg Mountains of the Transvaal, the Drakensberg or Quathlamba of Natal and the Transkei, the Stormberg of the north-eastern Cape Province, the Sneeuwberg, Nieuweveld, Roggeveld, and Kamiesberg further south and west, and is continued northwards under less well-known names to beyond the Kunene River. These mountains appear to be of no great height when viewed from the interior plateau, but on the seaward side they fall steeply, though rather irregularly, to the much lower level of country on the west and south.

On the west, as far south as the Olifants River, the escarpment is separated from the ocean by slopes of a more uniform nature, but in the south the Great Karroo and long ranges of fold-mountains (the Cape Folded Belt) intervene between it and the coast. The coast-line on the west is generally low, almost unbroken by bays or promontories, and beaten all the year round by a heavy surf; on the south there are several prominent headlands, which, however, afford little protection to ships. The only good natural harbour of any size is Saldanha Bay in the south-west, but at Walvis Bay, Table Bay, Algoa Bay and other places ports have been constructed.

H B 132 The general characteristics of the climate are determined more by the physical conformation of the land than by proximity to the equator. The eastern escarpments of the high plateau intercept the rain-bearing winds from the Indian Ocean, so that over the greater part of the interior the rainfall is slight (5 to 24 inches). This, added to the elevation of the land, makes the climate in general dry, bracing, and suitable for Europeans, notwithstanding the fact that the northern part of the country is within the tropics. Owing to the gradual increase of altitude from the coast to the interior, there is a remarkable uniformity of mean annual temperature over the greater part of the region: at

[1] The description given above is compiled mainly from the following sources: S. Passarge, *Südafrika*, 1908, chaps. iii–xv *passim*; L. Schultze, "Südwestafrika," in *Das Deutsche Kolonialreich*, 1910 (ed. H. Meyer), vol. ii, pp. 129–298; *The Oxford Survey of the British Empire*, 1914, vol. on "Africa", chaps. i–v; *Official Year Book of the Union of South Africa*, No. 9, 1928, esp. chaps. ii and xxvii; *The South and East African Year Book and Guide* (ed. A. S. Brown and G. G. Brown), 1929 edition, pp. 85–98 and *passim*.

2: Schapera E-4, 5 (no date) 1930
FX13 Hottentot FX13
Bushmen FX10.

very many places, irrespective of latitude or longitude, it is very close to 63° F., which is also the mean for the entire area. The difference between mean summer and mean winter temperatures is, however, considerable, increasing from the coast inland, while the daily range of temperature is also generally great. Frosts are common on the plateau during winter.

By far the greater part of the country receives the bulk of its rainfall in summer. The winter rainfall area is confined to a comparatively narrow strip parallel with the west coast, and the constant rainfall area to a much smaller belt in the south. Generally speaking the amount of precipitation decreases from east to west, with areas of heavier rainfall along the south coast and in the south-west. The average annual rainfall of about 24 inches is fairly regular all over the eastern half of South Africa, reaching a maximum of 40 inches in Zululand, and diminishing gradually along the south coast to rise again in the Cape Peninsula. It rapidly falls to 10 inches in the south-western Karroo, from which there is a steady decrease towards the north-west in South-West Africa, but the mean value is again approached in Angola and in the northern and eastern Kalahari.

This contrast in the amount and incidence of the rainfall tends to explain very largely the lack in correspondence of the principal river-systems in the south and west respectively. On the west the rivers are few, and only the Kunene, Orange, Olifants, and Berg are perennial, of which the first two, the largest, not only rise within centres of high rainfall, but also receive no important contributions throughout the lower part of their courses. In the south, owing to the moderately high winter rainfall, the smaller rivers rarely cease flowing, but all the important ones, such as the Gouritz, Gamtoos, and Sundays, actually originate in the interior region of summer rains behind the coast ranges and pass through the latter to the sea by means of deep gorges. They receive insufficient water in their courses across the Folded Belt to maintain a constant flow at all seasons, and in times of drought may become a series of pools.

Since most of the larger rivers rise upon the interior plateau, their gradients, over stretches, are high; sometimes there are waterfalls, such as the Rua Cana on the Kunene and the Aughrabies on the Orange, while rocky bars or rapids may occur in their channels within the coastal belt or just before it is reached. In consequence of this great slope, and of the intermittent supply of water, none of the rivers is navigable beyond its estuary. The mouths of the rivers

2: Schapera E-4, 5 (no date) 1930
FX13 Hottentot FX13
Bushmen FX10

and Middle Kalahari that it is scarcely possible to traverse parts of the country, and many routes can only be followed at such times as the pools have been filled by recent rain.

The winter climate is delightful. The heat during the other months is great, but there are occasional short, sudden, and therefore treacherous changes from extreme heat to cold. Malarial fever is prevalent, being particularly severe in the neighbourhood of the water-courses and other low-lying places, where during and immediately after the season of the heavy rains the dense bush, thick undergrowth, and rank vegetation afford excellent shelter to mosquitoes. The rainfall varies from about 8 inches in the south-west to more than 20 inches in the north and east; almost all the rain falls in the summer months, December to April, and chiefly in thunderstorms. Except in the north, none of this rainfall reaches the sea, the water being either evaporated directly or flowing into shallow depressions such as Lake Ngami and the Great Makarrikarri salt-pan. Over wide areas the country is so flat that the rain drains off partly in one direction, partly in another.

The principal river in the north is the Okavango, which, rising in the Angola highlands, flows into the Okavango marshes, a region about a hundred miles in length and from ten to fifty miles in width. From this reed-choked swamp the river at certain seasons overflows on the north into the Kwando and so reaches the Zambesi, and on the south into Lake Ngami and the Botletle River, which feeds the Makarrikarri depression and the great sandy plains of the north-east. During the rains the whole of this region is covered with wide stretches of water, often extending far beyond the horizon. The Nossob, Molopo, and Kuruman Rivers in the south, which formerly drained the greater part of the Middle and Southern Kalahari into the Orange River, are now for the most part sandy beds bordered with trees, and water is seldom found except towards their heads. At the present time no water leaves this part of the Kalahari except through evaporation. The country appears to be suffering from progressive desiccation, but there is said to be good evidence of an abundant supply of water not far beneath the surface.

The rainfall, though very small in the west and south, enables a fair amount of vegetation to flourish, chiefly grasses, shrubs, and trees, except in certain areas where the soil is too saline. The great plains, more especially in the south, are covered with tough sun-bleached Bushman grass (*Aristida brevifolia*), growing knee-high and giving

2: Schapera E-4, 5 (no date) 1930
FX13 Hottentot FX13
Bushmen FX 10.

Northern Damaraland to the south of the Karst region is a tract of extensive grass plains, from which emerge isolated eminences and a few mountain chains superimposed on the main plateau. Further south the whole country attains its highest elevation of over 6,000 feet in the Khomashochland of Windhoek district, while south and east of Windhoek rise the great Auas Mountains (highest altitude 7,886 feet), which form the watershed of South-West Africa. Deep clefts and gorges, widely-extended plains and high rugged peaks are characteristic of this region; valleys, too, expand in among the mountain groups, and are often of extreme fertility. To the south succeed the plateaus and table-topped mountains of Great Namaqualand. This part of the country is dominated by two longitudinal trenches, that of the Konkip to the west, that of the Great Fish River to the east. West of the former is a series of mountain ranges and elevated plains, among them being the Tsaras and Tiras Mountains and the Huib plateau, while to the east of it is the Hanam plateau. Still further east, beyond the Great Fish River, the Urinanib plateau overlooks the Kalahari. In the south-east the isolated Great and Little Karas Mountains rise to considerable heights, but the country is for the greater part flat or rolling. Eastward and north-east of these elevated tracts, the upland assumes a very level character, composed mainly of sand dune formation merging eventually everywhere into the sandveld of the Kalahari.

Although the northern half of South-West Africa falls within the Tropic of Capricorn, the climate is on the whole temperate rather than tropical. The extreme north and north-east are hot and trying to Europeans, and malaria is very prevalent there during the autumn; but on the central plateau the dryness of the air makes the summer heat easily supportable, and the country generally is healthy, with clear, bracing atmosphere and much wind. The winters are cold, and ice often forms upon the central and southern plateaus. Rain falls during the summer from October to April, but rarely during the winter season. The mean annual rainfall varies with the latitude, from 6 inches in the south to 12 inches in the centre and reaching 22 inches in the north.

Except for those rivers forming part of the northern and southern frontiers of the country—the Kunene, Okavango, and Orange—there are practically none which carry surface water all the year round. Almost all are simply dry sandy watercourses which become torrents for a short period after rain; but save in very wet seasons few of these

2: Schapera E-4, 5 (no date) 1930
FX13 Hottentot FX13
Bushmen FX10.

H B 133 flow for any considerable distance. For the rest of the time they have water only below the bed or in pools. Away from these sandy beds water as a rule is extremely hard to find. After heavy rains great hollows in the rocks are filled with water which is a blessing to any traveller passing that way, and there are also vleis and depressions which hold water for a short while. Springs, however, are few and far between, and then generally occur in the river-courses.

H B 137 Corresponding to the variation in the rainfall there is a variation in the character of the vegetation. In the extreme south for a considerable distance semi-desert conditions prevail, the arid, stony plateaus and plains supporting a sparse growth of grass and small, scrubby bushes, including the different species of *Grevia* which produce the wild berries so much used by all the natives as food. In heavy rainy seasons, however, nutritious grasses and flowers spring up everywhere. The river-courses are clothed with trees, especially the Kameeldoorn (*Acacia giraffae*) and the Kokerboom (*Aloe dichotoma*), and in all of them, too, the South American *Nicotiana glauca Grah.*, the wild tobacco plant, is found as a straggly, weedy shrub or tree. Northwards the veld assumes the characteristics of the Karroo until Rehoboth is reached, when it changes into park-like grass country studded with large thorn trees, being especially well timbered along the watercourses. From the mountainous portions of the Windhoek district northwards towards Omaruru the country is covered with level bush with an undergrowth of very nutritious grass, the valleys and watercourses being well wooded mostly with Acacia trees, especially the Kameeldoorn. Towards the north the bush becomes denser until it is fairly well timbered all over. In its northernmost section it is traversed by belts of open Mopane forest, and towards the Okavango fertile tropical vegetation is abundant. Numerous kinds of fruits, roots, and tubers used by the natives as food are found over the whole region, but most abundantly in the north. The edible bulbs belong for the most part to the *Iradaceae* family, while the tubers are generally *Asclepiads*, though the *Cyperaceae* and the *Oxalidae* also furnish succulent tuber-like growths.

H B 132 133 South of the Orange River the rocky western edge of the great interior plateau is extended into the highlands of Little Namaqualand in the Cape Province. With scanty soil and low rainfall (5 to 15 inches) this region shares the characteristics of the southern portion of South-West Africa. Short perennial streams are found in the Kamiesberg, but the mountainous country enclosed by the great bend

2: Schapera E-4, 5 (no date) 1930
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of the Orange River is very dry. The level arid plain of Bushmanland further east is essentially a continuation of the Kalahari, from which it is separated by the deep rocky valley of the Orange River. The summer rainfall is low (5 to 10 inches), increasing gradually from the west eastwards; there is practically no surface water, and the soil is usually bare, stony or sandy. The river-beds are mostly dry throughout the greater part of the year, and the Orange River is the only one that always contains water. The general aspect of the vegetation both here and in Namaqualand is that of widely-separated xerophytic shrubs and bushes, with a fair proportion of succulent plants in the low-lying valleys and on the rocky outcrops. Grasses do not form a conspicuous feature, but they occur on the high plateaus and sandy plains, where the vegetative period is short, and where they always assume a tufted habit.

Further south and east is the Upper or Northern Karroo, an arid tract of country stretching northwards to the Orange River at an elevation of between 2,800 and 6,000 feet above sea-level. It is bounded on the west by the Roggeveld, on the south by the Nieuweveld and Sneeuwberg ranges, which form part of the great escarpment of the interior plateau. The landscape appears for the most part in the form of vast treeless plains, only here and there broken by table-topped hills boldly scarped by sandstone and dolerite sheets, while occasionally dark ridges, the outcrops of inclined sheets of dolerite, are seen traversing the country for many miles.

The region is exposed to great extremes of temperature. Severe frosts are experienced in the winter nights, while the summer heats are correspondingly severe, reaching at times to 110° F. in the shade. The feeling of oppression at such times is increased by the hot westerly winds which predominate during the first half of summer, although the nights are cool even during the periods of greatest heat. The winter days, on the other hand, are very enjoyable, the air being keen and bright with a maximum of sunshine. There is a wide range of rainfall, from less than 5 inches in the north-west to 25 inches in the east; the greater part of this falls in violent summer thunderstorms, and almost all the water runs off the sun-baked soil into deep gullies which hurry it off to the sea. Severe droughts are common, and the streams are all intermittent. The soil is shallow and rock-strewn, except in the alluvial tracts in the valley bottoms, and surface limestone becomes an important feature in the drier parts of the region. Pans are abundant, and a striking feature in the low-grade

2: Schapera E-4, 5 (no date) 1930
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Bushmen FX10

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valleys of the north-west are the wide "vloers" of Carnarvon and Calvinia, more or less well-defined flat areas a few miles wide and thinly covered with brackish silt.

H B 137 311

Owing to the great range in rainfall and altitude there is a considerable diversity of conditions in this region. While the north-western parts are little better than desert, the more favoured districts to the south and east are well covered with permanently-occupied farms, although agriculture is restricted to the alluvial tracts. The vegetation is everywhere of a semi-desert character. The greater part of the country supports only a sparse and incomplete covering of shrublets and stunted, skeleton-like bushes, most of which belong to the family *Compositae*. In spite of their unpromising appearance when burnt up by the rays of the summer sun, they afford excellent sustenance for stock even in the driest seasons, and at the present time they provide nourishment to millions of sheep and goats, supporting one of the great wool growing industries of the world. Thorny plants, succulents, bulbous and tuberous plants abound in places, but trees, principally Acacias, appear as a rule only along the dry sandy river-beds. Grasses are frequent in the rainy season, but nowhere form the dominant feature of the vegetation.

H B 132 133 137

The High Veld of the Orange Free State and the Southern Transvaal is essentially an extension eastwards of the Upper Karroo, but has a much better rainfall. Lying for the most part over 5,000 feet above sea-level, and with an invigorating climate, it is perhaps the most favourable region in the Union for a white population. The rainfall ranges from about 20 to 35 inches, and occurs principally during the summer months in thunderstorms. The winters are dry and cold, and severe frosts are by no means uncommon. The streams are often perennial. The country generally presents a most monotonous type of scenery, consisting of vast rolling plains, although as one travels westward towards drier regions the surface becomes flatter or more varied by steep-sided flat-topped hills. It is essentially grass country and for the most part devoid of indigenous trees, except along the river-banks, which are frequently clothed with willows and mimosas; shrubs are found on the koppies, while growing among the grasses are large numbers of bulbous and tuberous plants.

H B 133

The Coastal Regions

The country between the escarpment and the ocean is considerably smaller than the interior plateau, but as regards climate and structure

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it presents as much diversity. Along the west coast from the Olifants River northwards as far as the Kunene stretches a desolate and barren wilderness, well deserving the name of "Namib" or desert by which it is known in South-West Africa. This arid tract varies in width from 18 miles in the north to about 85 miles towards the south, and the ground-level rises gradually and evenly from the sea to the plateau. The greater part of the surface is covered by drifting sand dunes, which stretch in wave after wave to the horizon; here and there low gravelly hills and ridges of hard rock project through the mantle of sand, while in places gravel plains and sandy flats vary the monotonous billow of the landscape. The belt of dunes is widest and most continuous south of the Swakop, some of them reaching a height of 300 feet and over; further north they are at once much less continuous and much lower, and the country east of them is more broken. The Northern Namib is further distinguished from the Southern by the presence of watercourses which have kept an open channel to the sea.

The cold Benguella current sweeping the coast from the Antarctic is primarily responsible for the aridity of this region. The coast is dominated by cool winds from south and south-west for about 50 miles inland, although there are occasional very hot winds from the east during the dry season. The winds blowing inland over the cold water lose a considerable amount of their moisture, which hangs as a dense mist over the coastal border almost all the year round, but especially heavily in winter. The Namib in consequence is a practically rainless desert, the mean annual rainfall at Walvis Bay, for instance, being 0·3 inches, and at Port Nolloth 2·17 inches. The temperature, lowered by the Antarctic current, is fairly constant. Port Nolloth in the south, with a mean annual temperature of 57·5°, has the least annual range of temperature in South Africa; February, the warmest month has a temperature of only 60·1°, while July the coolest month averages 54·2°.

The result of the deficient rainfall is a very scanty, intensely xerophytic vegetation. The plants are stunted and dwarfed, and nowhere form a conspicuous covering to the earth. Here and there considerable areas are almost entirely devoid of vegetation, although along much of the coastal border the wet and heavy sea fog maintains a sparse cover of bush on the sandy ground. From about 25 miles inland the landscape is characterized by such plants as the milk bush (*Euphorbia*) and cacti, while towards the east, in years of abundant rainfall, the country is fairly well grassed. In the river beds rich

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verdure may be found, such as various Acacias, the principal of which are the Kameeldoorn (*Acacia giraffae*) and the Ana (*Acacia albida*). The leaves and pods of the latter provide the staple food for the cattle, sheep and goats in these parts. Other characteristic vegetable growths are the inflammable candle bush (*Sarcocaulon Burmanni*) and, in the area inland from Walvis Bay, the famous *!naras* (*Acanthosicyos horrida Welw.*), a leafless cucurbitaceous plant with an edible melon-like fruit which when in season forms practically the sole article of diet of the natives. In one or two spots is found the most remarkable of all, the unique gymnosperm, *Welwitschia mirabilis*, which during a long lifetime produces only two pairs of leaves.

At the Olifants River commences another tract of country, characterized by mountains of the folded type, which extend in parallel ranges, separated by wide valleys, over the whole southern portion of the Cape Province as far east as Humansdorp. From the narrow coastal strip fringing this tract the ground rises more or less abruptly to the mountains of the Folded Belt. To the west the rise is gradual through the fertile Goudini valley of Worcester district; further eastward the vegetation and climate partake more and more of the Karroo character, the Oudtshoorn valley and the many kloofs to the east being generally known as the Southern Karroo. The scenery here rapidly changes to bare uninteresting veld, traversed by deep gullies which are generally dry in the summer. In all directions the landscape is bounded by barren-looking mountains, whose steep, rocky sides appear from a distance to be entirely destitute of vegetation. Nothing can exceed the contrast between the scenery on the opposite slopes of the coast ranges: the traveller from the south, after ascending through luxuriant vegetation, frequently clothed in mist, emerges suddenly into a region of precipices and rocks, where rain may not have fallen for months. The soil in the valleys, however, is fertile when it can be brought under irrigation.

The total annual rainfall is by no means deficient, the average for the region being about 29·5 inches, although it varies greatly according to locality. The average for the Cape Peninsula is 40 inches, most of it falling on the eastern side of Table Mountain. Immediately to the east of Cape Town and as far as Knysna there is a decrease to between 15 and 20 inches. The rainfall then becomes more abundant, the well-wooded Knysna itself being one of the best-watered districts of South Africa, with an average rainfall of 40 inches. Further inland, except on the mountain slopes, the rainfall is much less, and the range

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of temperature is somewhat greater. Most of the rains fall during the winter (April to September), when the temperature, though mild, is still relatively low. The summer is the dry season, and long droughts regularly recur.

These climatic conditions have resulted in the production of a peculiar and characteristic type of vegetation. The dominant plants are evergreen shrubs some three to six feet high, usually with small, stiff, leathery leaves. Between the shrubs are many smaller plants, numbers of which possess bulbs, tubers or other subterranean organs storing up quantities of water and food substances. The sandy plains support a dwarf, heath-like vegetation, while the marshy hollows, the stream margins, mountain ravines and mountain summits all possess their own peculiar plant forms. The families characteristic of this region include the *Proteaceae*, to which belong many of the evergreen shrubs, among them the well-known silver tree (*Leucadendron argenteum*) of the Cape Peninsula and the sugar bush (*Protea mellifera*); the *Restionaceae*, a family of grass-like plants which largely take the place of true grasses in this region, though many of the latter occur as well; and the *Ericaceae* (heath family), which are very numerous and often strikingly beautiful. Forest patches are found in the kloofs and seaward sides of the mountains, the largest area of more or less continuous forest in the Union lying between the Outeniqua Mountains and the sea, extending from George through Knysna to the Humansdorp district. They are composed almost entirely of high timber trees, the more common being species of yellow wood, cedar, ebony, stinkwood, ironwood, and sneezewood.

The last natural region with which we are concerned is the Central or Great Karroo of the Cape Province. Lying at a level of from 1,500 to 3,000 feet above the sea, it stretches as a gently-undulating plain from the foot-hills of the Folded Belt to the mountains forming part of the great escarpment in the north. On the west it extends to the valley of the Olifants River, while in the east the Sundays River may be taken as marking its limit. The mountains of the Folded Belt rob the rain-bearing winds from the sea of their moisture, and so give rise to the aridity of this region. The rainfall is scanty, the annual mean being less than 5 inches in the west, although it increases to 15 inches in the centre and east. The surface soil is shallow, hard, and compact; the river-courses are dry, except during the brief periods of rainfall in the summer, when the bulk of the water is rushed off immediately to the sea. In the dry season the whole region presents

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a most desolate appearance. Verdure is entirely wanting, the numerous gullies are empty, and the low ranges of ironstone koppies which dot the plains seem to reflect the heat as from a mirror. The vegetation is composed very largely of drought-resisting thorn bushes, succulents, bulbous and tuberous plants. Grasses appear only in exceptionally wet years, while trees are usually absent, except along the dry river-courses and on the mountain slopes in the east, where the rainfall is highest. Till the early years of the nineteenth century the Great Karroo was regarded as a desert unfit for man or beast; since then well-sinking and donkey transport have bettered the conditions, and the region has gradually become occupied.

Fauna

The great variety of habitat provided by the country taken as a whole has naturally favoured the development of a varied and abundant fauna.[1] South Africa has long been renowned for the wealth of its larger forms of animal life, although with the advance of European settlement and colonization the numbers have been rapidly reduced, particularly of certain classes of big game. The native inhabitants had certainly done something to reduce the numbers and affect the distribution of the fauna, but a balance had been reached which still left the country richly stocked. The Cape was full of game when the first European settlers established themselves there 250 years ago, and in their gradual spread inland the white men found the same abundance of fine forms of animal life in each new tract of country that they entered. A few decades were enough to convert each newly-opened district from a hunter's paradise into a stock-farming country, and the increase of veld-burning carried the destruction into other zones of life. But over large parts of South Africa the face of the country itself has been little changed on the whole, and a good deal of the original fauna has survived, even on much of the enclosed land.

The mammalian fauna is, or rather was, characterized by the great abundance and variety of antelopes, the presence of such remarkable "living fossils" as the elephant, giraffe, rhinoceros, hippopotamus, and aardvark, as well as of the buffalo, zebra, and quagga, and the abundance of carnivora, large and small. During the eighteenth

[1] An excellent short account is given by Dr. E. L. Gill, "Descriptive Sketch of the Fauna of South Africa," *Official Year Book of the Union*, No. 9, pp. 31–41. Cf. also Passarge, op. cit., pp. 78–86.

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immune to the effects of snake and scorpion poison.[1] One of these animals is killed, and its poison, diluted with water and urine, is rubbed in small quantities into small cuts made in the skin, or the poison sacs are pulped and boiled, and then swallowed in small doses. Schinz records an experiment made by himself on a Bushman doctor claiming this immunity.[2] He selected twelve scorpions and placed them, by means of forceps, on different parts of the man's body—hands, legs, arms, mouth, and testicles. Almost all of them stung the flesh deeply once or twice, in every instance causing a large drop of white matter to appear; then they crawled about leisurely, but made no further attempts at stinging. "The old man maintained that he felt no pain, and I have no reason to distrust him, as he would hardly have allowed himself to be stung by scorpions on the most sensitive parts of his body, merely to satisfy my curiosity, if the poison would have had any effects on him; even a full hour after our attempt the spots where he had been stung showed not the slightest change." This experiment seems therefore to show that there may be some foundation to the claim of immunity. The inoculation was apparently made in this case during the apprenticeship of the "doctor", under the direction of his master. Our main authorities on the Bushmen do not mention this practice at all, but I have myself spoken to several detribalized Bushmen and Nama in Little Namaqualand who claimed a similar immunity. Unfortunately I neglected to inquire further into the matter, beyond ascertaining the means of immunization.

Knowledge of Times and Seasons

In their system of time-reckoning the Bushmen make use chiefly of meteorological elements, based on recurrent changes in wind and weather, and of astronomical elements, based on observations of the sun, stars, and moon. Their larger divisions of time are the seasons, which, owing to their effect on the food supply and on the movements of the people, assume a pronounced importance in Bushman life. The division of the seasons is established by the rainfall. The Cape Bushmen distinguished four seasons, rendered by Bleek and Lloyd in the English equivalents of spring, summer, autumn, and winter, but the exact meaning of the native terms is not given.

[1] Campbell, *Journey in S. Africa*, 441; Thompson, *Travels in S. Africa*, i, 399; Cornell, *The Glamour of Prospecting*, 232.
[2] Op. cit., 395–6.